INDEPENDENT RELEASE VERIFICATION AND VALIDATION PLAN (IRVVP) ECS RELEASE B

Preliminary

(Deliverable 0612A)

March 15, 1996

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INDEPENDENT RELEASE VERIFICATION AND VALIDATION PLAN (IRVVP) ECS RELEASE B

Final
(Deliverable 0612A)

March 15, 1996

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1. INTRODUCTION

1.1 Purpose

The purpose of this Independent Release Verification and Validation Plan (IRVVP) for the EOSDIS Core System (ECS) Release B is to document:

1. The organizational relationships between IV&V and the ESDIS Project and ECS developer, "Hughes Information Technology Systems" (HITS),
2. The results of an ECS Release B Criticality Analysis and Risk Assessment (CARA),
3. The Release B specific IV&V level-of-effort activities that are to be performed,
4. The programmatic aspects of the EOSDIS IV&V ECS Release B development analysis effort (schedule and resource allocation), and
5. The reporting mechanisms employed.

The IRVVP follows the guidelines established for IV&V in the EOSDIS IV&V Management Plan **[1]** and in the Independent System Verification and Validation Plan **[2].** Section 1 provides an overview of the scope of this IRVVP, Section 2 documents the Release B lifecycle phase independent activity results, and Section 3 documents the lifecycle dependent activities. Appendix A provides the CARA methodology and results, and appendices B and C document the programmatic aspects of the effort. Appendix D documents the reporting mechanisms.

1.2 Scope

This IRVVP addresses the focus of IV&V development analysis activities to be performed during the period 1 February 1996 to 30 September 1996 for ECS Release B as defined in the IV&V Development Analysis Statement of Work **[3].** Specific analysis activities are as follows:

- Analyze detailed design documentation, operational scenarios, requirements databases, and design repositories for ECS Release B to assess whether the design is traceable to requirements and of high architectural quality (complete, accurate, implementable, scaleable). A detailed design analysis assessing the design in terms of requirements satisfaction, object class representation, and tool repository metrics will be performed for critical subsystems based on CARA results. A quantitative traceability analysis will be performed for all subsystems verifying the existence of traces between the Level 4 requirements and design elements. Findings will be documented in design analysis TAM(s) to be delivered two weeks following completion of the Release B CDR.

- Analyze software code and software development documentation (e.g., software development plans, project instructions, configuration management plans) for ECS Release B to assess whether the implementation is traceable to the design and of high quality (i.e., components comply with standards, are internally consistent, do not implement unintended functionality, support desired user interaction, and do not adversely impact the expandability of the system, etc.). Results will be correlated with CARA results and previous design analysis findings, and will be used to focus test witnessing, I&T, and other IV&V lifecycle analysis activities.

- Review ECS Release B test plans and procedures to prepare for IV&V Release B test witnessing activities.

1.3 ECS Release B Capability Overview

The major focus of Release B is to provide full functionality of all services required to support the AM-1 spacecraft launch and data operations (e.g., data processing, distribution, and archival), including full system integration and performance analysis. In addition, users are given access to Landsat 7 data, subscriptions for data distribution and processing are accepted, and general users are able to access data. Release B will be deployed to the full complement of the nine DAACs.

2. LIFECYCLE PHASE INDEPENDENT ACTIVITIES

Lifecycle phase independent IV&V activities for ECS Release B are those whose execution is independent of the particular lifecycle phase in which they are executed. This section addresses the organizational interfaces and mechanisms, Criticality Analysis and Risk Assessment (CARA) for ECS Release B, and ad hoc document review support.

2.1 Organizational Interfaces and Mechanisms

The EOSDIS IV&V team will identify, through coordination with the ESDIS Project and the HITS IV&V point of contact (POC), technical and management points of contact within the ECS Release B development and test organizations. Exhibit 2-1 shows the breakout of potential HITS POCs for IV&V Release B development analysis and test witnessing activities.

IV&V Release B Activity	HITS POC Area	HITS POC*
ECS Release B Design and Development Analysis	SCDO Release B Development Manager	R. Kochhar
	MSS Design/Development	A. Gary
	CSS Design/Development	L. Prabhala
	IOS, CLS, and DMS Design/Development	T. Codella
	PLS and DPS Design/Development	R. Billups
	DSS Design/Development	J. Dreisbach, M. Huber
	INS Design/Development	C. Gire
	FOS Release B Development Manager	C. Moore
	Real-Time System Design/Development	D. Dunn
	User Interface	J. Creegan
	Off-Line	J. Kuntz
	Planning & Scheduling	W. Moore, J. Toellner
	Release B Configuration Management	TBD
	Release B Quality Assurance	TBD
ECS Release B Test Document Review/Test Witness Planning	Release B I&T (SCDO)	T. Patterson
	Release B I&T (FOS)	H. Schroeder
	Release B Configuration Management	TBD
	Release B Quality Assurance	TBD

* POCs may change at HITS discretion

EXHIBIT 2-1: HITS POCs for IV&V Release B Activities

The HITS Release B Development Manager and System/Subsystem Leads will be IV&V's POCs for design analysis questions in support of CDR and follow-up analyses. The HITS Release B Configuration Management (CM) POC will be IV&V's primary contact point for obtaining code to conduct development analysis activities. The HITS Release B I&T Manager will be IV&V's POC for Release B test witness planning purposes.

The IV&V development analysis and test witnessing teams will utilize IV&V designated office space at the HITS facility to facilitate communication and access to information.

2.2 Critical Analysis and Risk Assessment (CARA)

One of the initial steps in planning and allocating IV&V resources to a release effort is to perform a Criticality Analysis and Risk Assessment (CARA) study. The outcome of the study allows the IV&V team to assign priorities to the various release components to assure that the most critical areas receive adequate coverage. Section 2.2 of the Independent System Verification and Validation Plan (ISVVP) **[2]** details the overall methodology for performing a CARA.

A CARA will be performed for ECS Release B following the ECS Release B CDR to be conducted in April, 1996. Results of the Release B CARA will be documented in the final version of this IRVVP to be submitted in June, 1996. In the interim, the IV&V Team will use the Release A CARA results augmented with input from the ESDIS ECS development staff, to focus Release B CDR design analysis activities. Summarized CARA results for Release A SCDO are shown in Exhibit 2-2, indicating the subsystems that received the highest CARA criticality and risk evaluations. Additional detail is provided in the Release A IRVVP **[4]**.

Segment	Subsystems With Highest Criticality Ratings
SCDO	CSMS/CSS - Communication Server Subsystem SDPS/DSS - Data Server Subsystem SDPS/PLS - Planning Subsystem

EXHIBIT 2-2: CARA Summary of CARA Results for SCDO Release A

2.3 Document Review

EOSDIS software documentation reviews are conducted to observe measurable progress in the software completion process by reviewing and analyzing contractor delivered software design and development documentation. Section 2.5 of the ISVVP **[2]** describes the goals and approach for performing such reviews. There are two kinds of document reviews conducted by the IV&V Team, namely:

- Document revisions received via the ESDIS CCB process as Configuration Change Requests (CCRs). IV&V responses are submitted in the form of ESDIS Project CCR Impact Analysis Reports. An example may be a CCR proposing changes to Level 3 requirements which could present a potential impact to the Release B detailed design.

- Document review requests distributed to the IV&V organization by the ESDIS Project. IV&V responses are submitted in the form of TAMs. An example includes review of a final database design specification submitted after the CDR.

The IV&V Team has reviewed several design-related documents in support of the SCDO Release B IDR and FOS Release A/B CDR; findings have been documented in Technical Analysis Memoranda (TAMs). Subsequent review of Release B design documents will be reviewed during the CDR timeframe. Revisions and updates to design documents will be reviewed, as resources are available, as they are received by the IV&V organization through the ESDIS CCB channel. The Release B CARA, as well as ESDIS priorities, will provide the focus for reviewing Release B documents.

3. LIFECYCLE PHASE DEPENDENT ACTIVITIES

Lifecycle phase dependent activities are those performed during specific phases of the ECS development lifecycle. The IV&V development analysis team will support the following major ECS Release B activities as defined in the ISVVP during the period from 1 February 1996 to 30 September 1996:

- Design Evaluation
- Software Development Evaluation
- Test Evaluation
- Formal Review Support

3.1 Design Evaluation

Design evaluation consists of examining both the design processes applied by the contractor and the actual Release B design products generated by the effort. Exhibit 3-1 shows the products and processes that apply to the IV&V design analysis activities.

Preliminary SCDO Release B design evaluation was performed during the SCDO Release B IDR in November, 1995. Subsequent detailed design analysis will occur during the SCDO Release B CDR in April, 1996. Release A CARA results, augmented with feedback from the ESDIS ECS Development Management Staff, will be applied to the review process to focus IV&V attention to the most critical areas. Based on priorities identified by the ESDIS ECS Development Management Staff, IV&V SCDO Release B design analysis activities will focus on two key areas: 1) internal interfaces design as presented in the 311 and 305 specifications, and 2) quantitative assessment of the traces between Level 4 requirements and design components. Release B follow-on design analysis (i.e., after the Release B CDR) will focus on reviewing the progress of software development processes and changes, as well as enhancements to design products.

Developer Design Process
Software Development Plan
StP Utilization (to build and represent design)
RTM Utilization (to represent L4 rqmts traces to design)
Developer Design Products
Subsystem Design Specs (305 Specs)
Database Design Specs (311 Specs)
ECS Operations Scenarios (605 Spec)
Internal Interfaces (313 Spec)
StP Rel B Design Repository
RTM Rel B L4 Rqmts to Design Baseline

EXHIBIT 3-1: Release B Design Process and Product Analyses

3.2 Software Development Evaluation

Software development evaluation consists of the IV&V Team analyzing software code and related documents and databases to assess whether the implementation is traceable to the design and of high

quality. The McCabe tool is key to the Release B software development analysis as it will be used to generate various metrics relating to the quality and complexity of the code and design. The software will also be checked for standards compliance, internal code consistency, appropriate functionality, and support of desired user interaction, as appropriate. The Release B CARA (to be conducted following the Release B CDR) will guide the process by which the IV&V Team selects the specific software items to evaluate. The IV&V Team will employ the following process in performing Release B software development analyses:

- Identify subsystem components (i.e., CSCIs) to be examined based on the CARA results and ESDIS Project coordination.
- Obtain code snapshots of identified software components during the code walk through period through ECS Release B Configuration Manager.
- Process code through McCabe tool. Output is McCabe metrics reports.
- Analyze metrics based on lifecycle stage.
- Analyze conformance to standards, internal code consistency, etc. (as time permits).
- Document findings in Release B Software Development Evaluation TAM (delivery date is TBD as completion of the Release B software development analysis activity falls outside the period of performance of this IRVVP).

ECS Release B Software Development Evaluation is primarily product oriented (i.e., focus is examination of software code); however, the implementation of software development processes (e.g., adherence to development standards) will be examined also as time permits. Exhibit 3-2 shows the ECS process and product related documentation that applies to the IV&V software development evaluation.

Software Development Process Related Documents
Configuration Management Plan 102/MG1
Configuration Management Procedures 103/MG3
Data Management Plan 104/MG1
Data Management Procedures 105/MG3
Software Development Plan 308/DV2
Development Plans 329/DV2
Software Development Product Related Documents/Databases
Software Code Snapshots
Software Development Folders
StP Design Repository
RTM Repository

EXHIBIT 3-2: ECS Process and Product Related Documents Supporting IV&V Software Development Evaluation

3.3 Test Evaluation

Release B test evaluation consists of review of test plans and procedures documents and preliminary planning for Release B test witnessing activities. The actual conduct of Release B test witnessing falls beyond the period of performance of this IRVVP. The IV&V Team will employ the following process in performing Release B test document review:

- Obtain system I&T test and verification plans, and test schedules.
- Review plans for sufficiency and completeness of test coverage and requirements traceability.
- Document findings in TAMs.

ECS Release B Test Process Evaluation focuses on how the HITS test process is implemented. The evaluation examines the test plans for the system as well as the verification plan, and the system integration and test plans to assess the likelihood that the process will (continue to) yield the required implementation end-products. Exhibit 3-3 lists the process-related documentation that relates to the IV&V test evaluation activity.

Test Evaluation Process Related Documents
ECS Implementation Plan 301/DV1
ECS System Integration and Test Plan 402/VE1
ECS Overall System Acceptance Plan 409/VE1
Integration and Test Plan 319/DV1
Integration and Test Plan 319/DV1
Maintenance and Operations Procedures 609/OP1
Maintenance and Ops Procedures 607/OP2
Training Material 625/OP3
ECS Operations Plan 608/OP1

EXHIBIT 3-3: ECS Process-Related Documents Supporting IV&V Test Evaluation

3.4 Formal Review Support

Formal review support, as defined in Section 2.6 of the ISVVP **[2]**, involves participation of the IV&V Team in major program milestones. The IV&V Team evaluates the products associated with each review along with related studies, and in turn provides independent evaluations of the program at a specific milestones. Specific goals associated with each milestone are documented in Section 2.6 of the ISVVP **[2].**

The following major reviews associated with ECS Release B will be supported by the IV&V Team:

SCDO Release B CDR	15 April 1996
Test Readiness Review (TRR)*	1 January 1997

Element Test Review (ETR) *	1 March 1997
Consent to Ship Review (CSR) *	1 June 1997
Release Readiness Review (RRR) *	1 September 1997

* review date falls outside the period of performance of this IRVVP

The IV&V Team will attend these reviews and identify technical issues as required. Evaluations of supporting documentation and potential issues will be reported via Review Item Discrepancies (RIDs) and through the Technical Analysis Memoranda (TAM) and the Technical Issues Memorandum (TIM) vehicles described in Appendix D.

Appendix A: CARA METHODOLOGY AND RESULTS

A Release B CARA will be performed following the ECS Release B CDR to be conducted in April, 1996. Results of the Release B CARA will be documented in the final version of this IRVVP to be submitted in June, 1996. In the interim, the IV&V Team will use the Release A CARA results augmented with input from the ESDIS ECS development staff, to focus Release B CDR design analysis activities.

Appendix B: Task Activity Schedule

Task 6 IV&V activities will center on major ECS program milestones. The milestones that have been identified for ECS Release B are as follows:

SCDO Release B CDR	15 April 1996
Test Readiness Review (TRR)*	1 January 1997
Element Test Review (ETR) *	1 March 1997
Consent to Ship Review (CSR) *	1 June 1997
Release Readiness Review (RRR) *	1 September 1997

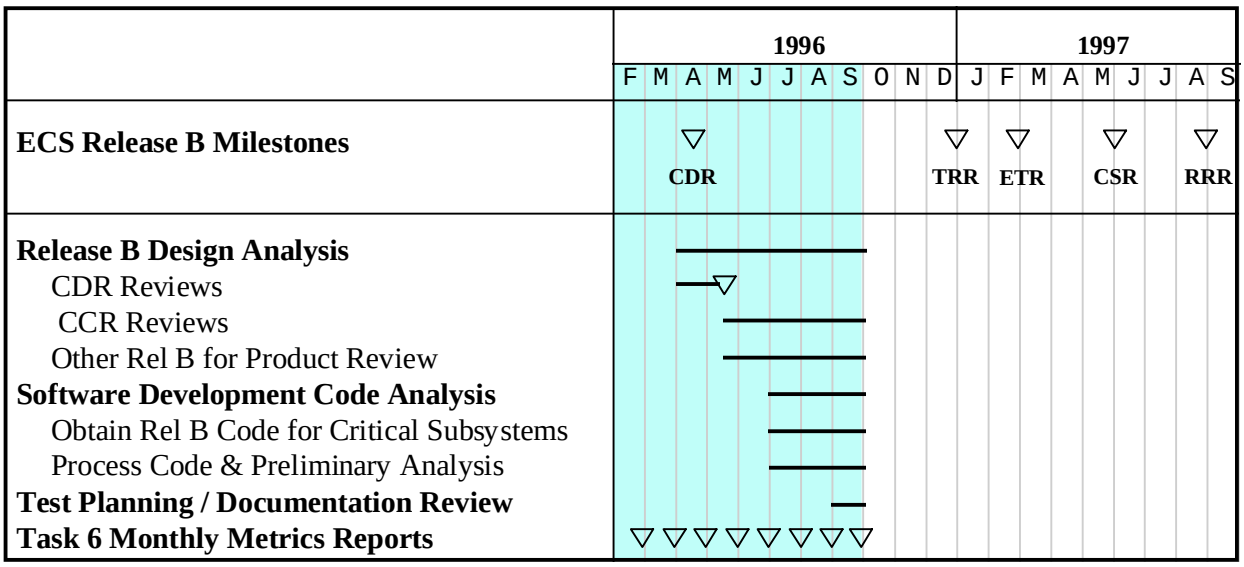
* review date falls outside the period of performance of this IRVVP

The Release B development analysis deliverables to be completed during the period of performance from 1 February 1996 through 30 September 1996 are as follows:

Deliverable	Deliverable ID	Date Required
Preliminary Rel B IRVVP	0612A	Rel B CDR - 1 Month
Final Rel B IRVVP	0612B	Rel B CDR + 6 Weeks
Rel B Design Analysis TAM(s)	0613	Rel B CDR + 2 Weeks
Rel B CDR RIDs	0614	Rel B CDR + 2 Weeks
IV&V Metrics Report	0616	Monthly (end of each month)

EXHIBIT B-1: Release B Deliverables

Exhibit B-2 shows a schedule summarizing the activities and deliverables associated with the development analysis of ECS Release B. Major deliverables and approximate duration of associated subtasks are shown.



Notes: Shaded portion shows period of performance covered by this IRVVP

EXHIBIT B-2: EODIS IV&V Task 6 ECS Release A Development Analysis Schedule

Appendix C: Task Resource Allocation

The following labor categories have been allocated to support development analysis activities of the ECS Release B:

- Senior Systems Engineer
- Systems Engineer
- Database Specialist

Exhibit C-1 details the planned allocation of resources per month, and by labor category, for Task 6, along with the total amount allocated to Release B activities.

	1996							
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Sr. Systems Engineer	0	2	2.75	1.75	1.75	1.75	1.75	1.75
Systems Engineer	0	.5	.5	.5	.5	.5	.5	.5
Database Specialist	0	.25	.5	.5	.5	.5	.5	.5
Total Allocation to Release A Activities	0	2.75	3.75	2.75	2.75	2.75	2.75	2.75

EXHIBIT C-1: Planned Release B Resource Allocation for Task 6

Appendix D: Report Formats

This appendix describes the report formats used to document analysis findings supporting IV&V ECS Release B Development Analysis activities. Specific reporting mechanisms are as follows:

- EOSDIS IV&V Technical Analysis Memorandum (TAM)
- EOSDIS IV&V Technical Issues Memorandum (TIM)
- ESDIS Project CCR Impact Analysis Report
- Monthly Metrics Report

The EOSDIS IV&V TAM format is used to document IV&V Release B software design, development, and test evaluation deliverables as well as the results of document reviews. The TAM format is illustrated in Section D.1. TIMs are used to track and report information on issues to facilitate early Project visibility into important issues. The format for the TIM is currently being developed; however, a general description of the TIM as well as the types of information to be tracked is described in Section D.2. CCR Impact Analysis Reports are used to provide comments, recommendations, and potential impacts in response to proposed changes to EOSDIS documents. The IV&V Team uses the report format provided by the ESDIS Configuration Control Board (CCB) which is shown in Section D.3. The IV&V Team will submit monthly metrics reports associated with Release B development analysis activities performed during each month. Specific Release B metrics will be generated showing, for each baseline release of RTM, the number of Level 4 requirements allocated to each subsystem and the number of requirements missing traces to design components. Additional metrics will be added to represent code analysis activities.

D.1 EOSDIS IV&V Technical Analysis Memorandum (TAM) Format

To: {cognizant person - usually the applicable NASA manager}

From: EOSDIS IV&V Team

Subject: {the topic of this TAM}

1. ***Context*** - {describe the specific configuration(s)/area(s)/document(s)/etc. affected}

2. ***Discussion*** - {discuss specific concerns(s)/reason(s) - what/why - for writing this}

3. ***Recommendations*** - {what do you suggest needs to be done - who/what/why}

4. ***Recommended Distribution*** - {who else should receive this - organization/name}

Originator:

_____
{typed name}
EOSDIS IV&V Analyst

Approved:

_____
{typed name}
EOSDIS IV&V Task Lead

D.2 EOSDIS Technical Issues Memorandum (TIM) Description

The Project Issue Tracking System (PITS) is being developed to provide an automated mechanism to document and track issues in a way that enhances overall IV&V effectiveness. The PITS supports a rigorous, repeatable process which facilitates the identification and resolution, over time, of important issues and the analysis of trends. It is targeted at the complete system development life cycle and the effective monitoring of all categories and domains of issues that significantly affect ongoing project success. This distinguishes it from other issue tracking systems which primarily focus on project milestone issues (like Review Item Discrepancy (RID) tracking systems), development product related issues (like the Distributed Defect Tracking System (DDTS)), etc..

Issues have a life cycle of their own: identification (existence), documentation (description/ prescription), publication (opened), remedial actions (resolution), and termination (closure). Unlike Technical Analysis Memoranda (TAMs), the PITS covers the complete issue life cycle. TAMs stop after the issue publication phase; there is no formal mechanism to follow-up on the successful resolution of issues. Consequently, on the surface, an "old" TAM looks like an "old" analysis and set of issues. An "old" issue is only really "old" when it is no longer an issue (i.e., the issue has been satisfactorily resolved or overtaken by events). The PITS is the primary mechanism for documenting the extent to which issues generated at a given moment-in-time are still important at a later moment-in-time.

The TAM documents a fairly broad set of issues at varying levels of importance (severity and criticality) that result from comprehensive analyses. TAMs, in particular, are both a timely and a thorough mechanism for understanding why and what issues exist, but the overall importance of a TAM is diluted by the varying importance of the issues it raises. Issues at all levels of importance should be documented (as they are, and will continue to be, in TAMs). However, those of marginal-value (i.e., do not significantly affect success) need not be given a high-level of management attention. The PITS filters-out issues of marginal-value, so that project management can concentrate on the resolution of the issues that truly matter.

The vehicle for documenting and tracking issues within a PITS repository is the Technical Issue Memorandum (TIM). A TIM is a named, discrete collection of metadata (searchable issue characterization and status information), descriptive text, prescriptive text, and resolution progress information. Each TIM is focused on a clearly defined set of issues at the same level of importance. Each TIM supports the tracking of issue resolution progress to closure (via the PITS "Resolution Chronology").

The TIM report format is still under development; however the information to be tracked for a particular issue is shown in Exhibit D-1.

Data Item	Description
Issue Category	the category of the issue, keyed to the system development life cycle (e.g., "Requirements", "Integration & Test") and project management (e.g., "Engineering Processes", "Programmatics")
Impact Category	the category of the impact of the issue, keyed to the system development life cycle (e.g., "Requirements", "Integration & Test") and project management (e.g., "Engineering Processes", "Programmatics")
Issue Domain 1	the project development activity and phase that the issue is associated with (e.g., "ECS Rel A", "EGS Version 2")
Issue Domain 2 (optional)	same as Domain 1
Issue Milestone (optional, associated with Domain 1)	the formal review that the issue pertains to (e.g., "CDR", "CSR")
Issue Severity	the severity level of the issue (e.g., "Major", "Moderate", "Minor")
Issue Criticality	the level of criticality of the issue (e.g., "Critical", "Essential", "Fulfillment"
Issue Visibility	defines who has access to the issue (e.g., "Public", "Private")
Issue Status	disposition of issue (e.g., "Draft", "Opened", "Closed", "Closed with Concerns"
Issue Dates	dates issue was opened, closed, and updated
Issue Subject	brief summary of issue
Issue Description	Concise and complete description of issue
Impact Description	Concise and complete description of impacts of issue
Recommendations	List of recommendations or actions needed to fix the issue
Closure Criteria	Minimum criteria which must be satisfied to close issue
Relationships	TAMs, RIDs, etc. that address or are associated with this issue

EXHBIT D - 1: TIM Data Items

CCR#	**CCR Title**	**CCR Sponsor**
Date Dist.	**Comments Due:**	**Due Date**
Comments		
Recommendations		
Potential Impacts		**None**
Cost:		
Schedule:		
Requested by SMO	**Signature & Date**	

EXHBIT D - 2: EOSDIS CCR Impact Analysis Report Format

Appendix E: List of References

IV&V Documents

[1] Deliverable 0301 EOSDIS Independent Verification and Validation (IV&V) Management Plan, December 2, 1994

[2] Deliverable 0302 Independent System Verification and Validation Plan (ISVVP), December 15, 1994

[3] EOSDIS IV&V Task 6B, ECS Development Analysis, Statement of Work, January 25, 1996.

[4] Independent Release Verification and Validation Plan (IRVVP), ECS Release A, Deliverable 0608A, January 31, 1996.

[5] ECS Release B Project Organization Chart, 12/28/95

Appendix F: Tools and Data Bases Utilized

Task 6 activities will utilize a number of tools during the analysis and evaluations of Release B products and processes. Exhibit F-1 provides a brief overview of the tools described in the Independent System Verification and Validation Plan (ISVVP) **[2]** which will support Task 6.

Tool	Utilization
RTM	Analyze requirements and traceability to tests and design using exports from ECS contractor.
ClearCase	Evaluate software development (builds/releases) and configuration management activities.
Automated Requirements Database (ARDB)	Maintain requirement evaluations, tailored also to support CARA effort.
Issue/Discrepancy Handling System (IDHS)	Store and maintain Release B issues and discrepancies.
Mosaic/Netscape	Access EDHS and download necessary files.
PITS (Project Issues Tracking System)	Issue tracking and reporting tool
DDTS (Distributed Defect Tracking System)	Issue tracking system
StP (Software through Pictures)	Object Model analysis tool
McCabe Tools	Generate software complexity and design metrics

EXHIBIT F-1: Tools to be Utilized During Release B Development Analysis

Additional tools will be identified and used as required. Any tools used during Task 6 activities will be documented in the corresponding TAM or TIM.

Appendix G: List of Acronyms

CARA	Criticality Analysis And Risk Assessment
CCB	Change Control Board
CCR	Configuration Change Request
CDR	Critical Design Review
CLS	Client Subsystem
CSCI	Computer Software Configuration Item
CSMS	Communication and System Management Segment
CSR	Consent To Ship Review
CSS	Communications Subsystem
DDTS	Distributed Defect Tracking System
DMS	Data Management Subsystem
DPS	Data Processing Subsystem
DSS	Data Server Subsystem
ECS	EOSDIS Core System
EDHS	ECS Data Handling System
EOS	Earth Observing System
ETR	Element Test Review
FOS	Facilities Operations Segment
GSFC	Goddard Space Flight Center
HITS	Hughes Information Technology Systems
I&T	Integration and Test
IDHS	Issue Discrepancy Handling System
IDR	Incremental Design Review
INS	Ingest Subsystem
IOS	Interoperability Subsystem
IRVVP	Independent Release Verification and Validation Plan
ISVVP	Independent System Verification and Validation Plan
IV&V	Independent Verification And Validation
L0	Level 0
L4	Level 4
LaRC	Langley Research Center
MSFC	Marshall Space Flight Center
PLS	Planning Subsystem
POC	Point of Contact
PDR	Preliminary Design Review
RID	Review Item Discrepancy
RRR	Release Readiness Review
RTM	Requirements Traceability Management tool
SCDO	Science & Communications Development Office
SDPS	Science and Data Processing Segment
SI&T	System Integration and Test
StP	Software through Pictures tool

TAM	Technical Analysis Memorandum
TBD	To Be Determined
TBR	To Be Reviewed
TIM	Technical Issue Memorandum
TRMM	Tropical Rainfall Measurement Mission
TRR	Test Readiness Review
V0	Version 0 (Zero)
V1	Version 1